

REMARKS

Claims 1-5 and 7-15 are presently pending in the present application. All are rejected.

Section 103(a) rejections

All the claims in the application stand rejected under 35USC§103(a) as obvious over *Sumi et al.*, US 5,397,744, in view of *McTeer*, US 5,990,011. Applicants respectfully traverse.

It is well established that to sustain a case of prima facie obviousness that would support a Section 103 rejection, it is necessary to provide (1) one or more references, (2) that were available to the inventor at the time the invention was made, and (3) that teach (4) a suggestion to combine or modify the references, (5) the combination or modification of which would appear to be sufficient to have made the claimed invention obvious to one of ordinary skill in the art. *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Wilder*, 429 F.2d 447, 166 USPQ 545 (CCPA 1970); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Lalu*, 747 F.2d 703, 223 USPQ 1257 (CAFC 1988); *In re Fritch*, 972 F.2d 1260, 23USPQ.2d 1780 (CAFC 1992); *Rockwell Int'l Corp v. U.S.*, 147 F.3d 1358, 47 USPQ.2d 1027 (CAFC 1998); *In re Lueders*, 111 F.3d 1569, 42 USPQ.2d 1481 (CAFC 1997).

The references cited cannot be combined to arrive at applicants' invention. Applicant's invention as claimed requires "lining the bottom surface and sidewalls" of the damascene structure, but *Sumi* teaches no such lining. Note that Figures 7 and 9c of *Sumi* show that the conductive material 23a has exposed sidewalls (not numbered) after etching. One cannot combine *Sumi* with *McTeer* without losing these exposed sidewall features.

Applicants' single independent claim 1 also recited the limitation that the liner layer "imparts a random grain orientation in the conductive material of the conductor to improve electromigration lifetime of the conductor." *McTeer*'s encapsulated structure does no such thing and teaches away from Applicants' invention. *McTeer*'s "wetting layer" is dictated by the material to be laid upon in, not the conductor beneath it, and is

therefore formed of an alloy effective in binding to the upper conductor. Applicant's layer "contacting a top surface" is dictated by the electromigration properties of the conductor beneath it, regardless of what material is subsequently deposited upon it. No one would look at McTeer's invention and suggest a material to improve electromigration, because to do so would disturb the wetting properties of McTeer's wetting layer.

The inability to combined the cited references to arrive at Applicants' encapsulation for improving electromigration properties establishes that there can be no combination or modification to the references sufficient to render the amended independent claims obvious to one of ordinary skill in the art. Therefore, there can be no *prima facie* case of obviousness and Examiner's other arguments with respect to the narrower dependent claims are moot. Applicant therefore believes claim 1 and its progeny to be in condition for allowance.

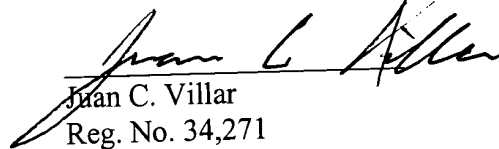
CONCLUSIONS

For all of the foregoing reasons, Applicant believes the claims to be in condition for allowance and respectfully request same.

If the Examiner is relying on any personal knowledge in rejecting any claims, Applicants respectfully request that any such knowledge be made known to Applicants in an affidavit in accordance with 37 C.F.R §1.107.

This response to a final office action is being mailed within two months thereof.

Respectfully submitted,


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